Title page and Index of this volume, now completed, will be furnished with the next number.

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VOL. I. FEBRUARY, 1891. No. 12.

CONTENTS:

PAGE

List of Land Mammals of California: WALTER E. BRYANT . . 353

Preliminary List of Pacific Coast Hepaticæ: LUCIEN M. UNDERWOOD . 361

A New Cucurbit: ALFRED COGNIAUX 368

Geographical Distribution of Land Birds in California:
CHARLES A. KEELER 369

Californian Lobeliaceæ: KATHERINE BRANDEGEE 373

The Wolverine in California: WALTER E. BRYANT . . . 377

A New Species of Esenbeckia: T. S. BRANDEGEE 378

Secondary Migration of Birds: A. W. ANTHONY 376

Recent Literature. 381

I. Hing, or Patriotic Rising. Chinese Secret Societies in the United States, and Customs of the Chinese in America. The January Auk. The American Ornithologists' Union: A Seven Years' Retrospect.

Proceedings of Societies 384

California Academy of Sciences.

California Ornithological Club.

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A BIOLOGICAL JOURNAL.

VOL. I. FEBRUARY, 1891. No. 12.

A PROVISIONAL LIST OF THE LAND MAMMALS OF CALIFORNIA.

BY WALTER E. BRYANT.

Order MARSUPIALIA. Marsupials.

Family DIDELPHIDÆ. Opossums.

[1.] **Didelphys californica** Bennett.

TEXAS POSSUM.—No authentic record of this species in California is known to me; it has been found at the mouth of the Rio Grande, and Prof. Baird says: "This species is probably abundant in California, though I have not been able to examine any from that region."

Order UNGULATA. Ungulates.

Family CERVIDÆ. Deer.

2. **Cariacus macrotis** (Say).
MULE DEER.

3. **Cariacus columbianus** (Richardson).
BLACK-TAILED DEER.

4. **Cervus canadensis** Erxleben.
AMERICAN ELK.

Family ANTILOCAPRIDÆ. Prong-horn Antelopes.

5. **Antilocapra americana** Ord.
ANTELOPE.

Family BOVIDÆ. Cattle.

6. **Ovis canadensis** Shaw.
MOUNTAIN SHEEP.

Order RODENTIA. Rodents.

Family SCIURIDÆ. Squirrels.

7. **Arctomys flaviventer** Aud. & Bach.
YELLOW-BELLIED MARMOT.

8. Tamias chrysodeirus Merriam.

GILDED CHIPMUNK.—Californian specimens have hitherto been known under the name of *Tamias lateralis* (Say) (Say's Chipmunk).

9. Tamias townsendii hindsii (Gray).

REDWOOD CHIPMUNK.—The range of this variety, as far as is known, is restricted to the region west of the Coast Range from San Francisco northward. This form has, until recently, been known generally as *Tamias asiaticus townsendi* (Bachman) (Townsend's Chipmunk).

10. Tamias quadrimaculatus Gray.

SACRAMENTO CHIPMUNK.—This species inhabits the valley of the Sacramento River, northward to Shasta County, California, and to Fort Klamath, Oregon. It has sometimes been confused under *Tamias asiaticus quadrivittatus* (Say) (Rocky Mountain Chipmunk).

11. Tamias macrohabdotes Merriam.

LONG-EARED CHIPMUNK.—Inhabits the Sierra Nevada Mountains (Placer County), eastward to Carson City, Nevada.

12. Tamias senex Allen.

GRAY CHIPMUNK.—Inhabits the Sierra Nevada Mountains (Placer County), northward to Fort Klamath, Oregon.

13. Tamias merriami Allen.

MERRIAM'S CHIPMUNK.—Inhabits the mountains of Southern California, from San Diego County northward to Tulare and Monterey counties.

14. Tamias speciosus Merriam.

SAN BERNARDINO CHIPMUNK.—Inhabits the San Bernardino Mountains.

15. Tamias frater Allen.

SIERRA NEVADA CHIPMUNK.—Inhabits the Sierra Nevada Mountains (Placer County).

16. Tamias amœnus Allen.

KLAMATH CHIPMUNK.—Occurs from Fort Klamath, Oregon, southward to Placer County, California; also at Glenbrook and Carson City, Nevada.

17. Tamias leucurus Merriam.

ANTELOPE SQUIRREL.—Californian specimens of this species have formerly (prior to 1889) been known as *Tamias harrisi* (Aud. & Bach.) (Harris's Chipmunk).

18. Spermophilus grammurus douglassi (Richardson).

OREGON GROUND SQUIRREL.—Extends as far south in California as Sebastopol (F. H. Holmes). I have found this variety common in the Russian River valley northward from Healdsburg.

19. Spermophilus grammurus beecheyi (Richardson).

CALIFORNIA GROUND SQUIRREL.

20. Spermophilus beldingi Merriam.

SIERRA NEVADA SPERMOPHILE.—Previous accounts of *Spermophilus richardsoni townsendi* (Bach.) (Townsend's Spermophile), in California, refer mainly or wholly to this species.

21. Spermophilus mohavensis Merriam.

MOJAVE DESERT SPERMOPHILE.—This species known thus far only from the Mojave Desert replaces in California *Spermophilus tereticaudus* Baird (Fort Yuma Spermophile) (?).

22. Sciurus hudsonius douglassi (Gray).

DOUGLASS'S CHICKAREE.

23. Sciurus hudsonius fremonti (Aud. & Bach.)

FREMONT'S CHICKAREE.

24. Sciurus hudsonius californicus Allen.

CALIFORNIA CHICKAREE.—Distribution unknown beyond the fact of its inhabiting Placer County.

25. Sciurus fossor Peale.

CALIFORNIA GRAY SQUIRREL.

26. Sciurus fossor nigripes Bryant.

BLACK-FOOTED GRAY SQUIRREL.

27. Sciuropterus volucella hudsonius (Gmelin).

NORTHERN FLYING SQUIRREL.

Family HAPLODONTIDÆ. Sewellels.

28. Aplodontia major Merriam.

CALIFORNIA SEWELLEL.—Replaces in California *Haplodon rufus* (Raf.) (Sewellel) of earlier writers.

Family CASTORIDÆ. Beavers.

29. Castor canadensis Kuhl.

BEAVER.

Family MURIDÆ. Mice.

[30.] **Fiber zibethicus pallidus** Mearns.

PALE MUSKRAT.—Has never actually been taken in California. The Mexican Boundary Survey has recorded a specimen *(Fiber zibethicus)* killed in the Gila River, near Ft. Yuma.

31. Evotomys californicus Merriam.

CALIFORNIA RED-BACKED MOUSE.—Known only from Eureka, Humboldt County.

32. Arvicola austerus curtatus (Cope).

WESTERN PRAIRIE MOUSE.

33. Arvicola riparius (Ord).

AMERICAN MEADOW MOUSE.

34. Hesperomys leucopus (Le Conte).

WHITE-FOOTED MOUSE.

35. Hesperomys leucopus sonoriensis (Le Conte).

ALPINE DEER MOUSE.

36. Hesperomys leucopus deserticolus Mearns.

DESERT DEER MOUSE.

37. Hesperomys eremicus Baird.

SILKY CLIFF MOUSE.

38. Hesperomys californicus (Gambel).

PARASITIC MOUSE.

[39.] **Hesperomys aztecus** De Saussure.

AZTEC MOUSE.—Of doubtful occurrence in California.

40. Hesperomys anthonyi Merriam.

ANTHONY'S MOUSE.—Recorded from San Diego County by Mr. F. Stephens.

41. Ochetodon longicauda (Baird).

LONG-TAILED HARVEST MOUSE.

42. Neotoma cinerea (Ord).

BUSHY-TAILED RAT.

43. Neotoma floridana (Ord).

WOOD RAT.

44. Neotoma mexicana Baird.

BUSH RAT.

45. Neotoma fuscipes Cooper.

DUSKY-FOOTED WOOD RAT.

Family GEOMYIDÆ. Gophers.

46. Thomomys talpoides bulbivorus (Richardson).
PACIFIC GOPHER.

47. Thomomys talpoides umbrinus (Richardson).
BLACK-FACED GOPHER.

48. Thomomys perpallidus Merriam.
DESERT GOPHER.

Family SACCOMYIDÆ. Pouched Rats.

49. Perognathus penicillatus Woodhouse.
TUFT-TAILED POCKET MOUSE.

50. Perognathus monticola Baird.
MOUNTAIN POCKET MOUSE.

51. Perognathus longimembris (Coues).

52. Perognathus inornatus Merriam.
PLAIN POCKET MOUSE.—Fresno.

53. Perognathus fallax Merriam.
SAN BERNARDINO POCKET MOUSE.

54. Perognathus spinatus Merriam.
SPINED POCKET MOUSE.—Lower Colorado River, California.

55. Perognathus californicus Merriam.
CALIFORNIA POCKET MOUSE.—Berkeley.

56. Perognathus armatus Merriam.
MOUNT DIABLO POCKET MOUSE.—Mt. Diablo.

57. Dipodomys phillipsi (Gray).
PHILLIP'S POCKET RAT.

[58.] **Dipodomys agilis** Gambel.

59. Dipodomys deserti Stephens.
DESERT POCKET RAT.

60. Dipodomys californicus Merriam.
CALIFORNIA POCKET RAT.—Ukiah, Mendocino County.

Family ZAPODIDÆ. Jumping Mice.

61. Zapus hudsonius (Zimmermann).
JUMPING MOUSE.

Family HYSTRICIDÆ. Porcupines.

62. Erethizon epixanthus Brandt.
WESTERN PORCUPINE.

Family LAGOMYIDÆ. Pikas.

63. Lagomys schisticeps Merriam.

GRAY-HEADED PIKA.—Replaces in California *Lagomys princeps* Richardson (North American Pika; Little Chief Hare).

Family LEPORIDÆ. Hares.

64. Lepus americanus washingtoni (Baird).

WESTERN VARYING HARE.

65. Lepus sylvaticus audubonì (Baird).

AUDUBON'S HARE.

66. Lepus sylvaticus arizonæ Allen.

DESERT HARE.—Southern Arizona; Kernville, California (True).

67. Lepus campestris Bachman.

PRAIRIE HARE.

68. Lepus trowbridgei Baird.

TROWBRIDGE'S HARE.

69. Lepus cinerascens Allen.

ASHY HARE.

70. Lepus californicus Gray.

CALIFORNIA HARE.

Order CHIROPTERA. Bats.

Family VESPERTILIONIDÆ. Ordinary Bats.

71. Anthrozous pallidus (Le Conte).

PALE BAT.

72. Vesperugo noctivagans (Le Conte).

SILVERY-HAIRED BAT.

73. Vesperugo hesperus (H. Allen).

PIGMY BAT.

74. Vesperugo merriami Dobson.

MERRIAM'S BAT.—Colorado and Mojave deserts.

75. Atalapha noveboracensis (Erxleben).

RED BAT.

76. Atalapha cinerea (Beauvois).

HOARY BAT.

77. Vespertilio nitidus H. Allen.

CALIFORNIA BAT.

78. Vespertilio evotis H. Allen.

LONG-EARED BAT.

79. Vespertilio subulatus Say.
LITTLE BROWN BAT.

80. Vespertilio carolii Temminck.
BROWN BAT.

81. Vespertilio lucifugus Le Conte.
BLUNT-NOSED BAT.

Family EMBALLONURIDÆ. Free-tailed Bats.

82. Molossus californicus Merriam.
CALIFORNIA MASTIFF BAT.—Los Angeles County.

83. Nyctinomus femorosaccus Merriam.
POUCHED BAT.—Desert region of Southern California.

84. Nyctinomus mohavensis Merriam.
MOJAVE BAT.—Colorado and Mojave deserts.

Family PHYLLOSTOMIDÆ. Leaf-nosed Bats.

85. Macrotus waterhousei Gray.
WATERHOUSE'S BAT.

Order INSECTIVORA. Insect Eaters.

Family SORICIDÆ. Shrews.

86. Sorex sp.?

Family TALPIDÆ. Moles.

87. Scapanus townsendii (Bachman).
OREGON MOLE.

[88.] Neurotrichus gibbsii (Baird).

Order CARNIVORA. Flesh Eaters.

Family URSIDÆ. Bears.

89. Ursus americanus Pallas.
BLACK BEAR.

90. Ursus horribilis Ord.
GRIZZLY BEAR.

Family PROCYONIDÆ. Raccoons.

91. Procyon lotor (Linné).
RACCOON.

(?) Family VIVERRIDÆ. Civet Cats.

92. Bassaris astuta Lichtenstein.
RING-TAILED CAT.

Family MUSTELIDÆ. Weasels.

93. Lutra canadensis (Turton)
NORTH AMERICAN OTTER.—Identical with *Lutra californica* Gray (California Otter.)

94. Mephitis mephitica (Shaw).
COMMON SKUNK.

95. Spilogale phenax Merriam.
CALIFORNIA SKUNK.

96. Taxidea americana (Boddaert).
AMERICAN BADGER.

97. Gulo luscus (Linné).
WOLVERINE.

98. Putorius vison (Schreber).
AMERICAN MINK.

99. Putorius brasiliensis frenatus (Stewart).
BRIDLED WEASEL.

100. Mustela pennanti Erxleben.
PENNANT'S MARTEN.

101. Mustela americana (Turton).
AMERICAN SABLE OR MARTEN.

Family CANIDÆ. Dogs.

102. Urocyon virginianus littoralis (Baird).
COAST GRAY FOX.

103. Vulpes fulvus argentatus (Shaw).
SILVER FOX..

104. Vulpes macrotis Merriam.
LONG-EARED FOX.

105. Canis lupus griseo-albus (Linné).
GRAY WOLF.

106. Canis latrans Say.
COYOTE.

Family FELIDÆ. Cats.

107. Felis concolor Linné.
PUMA. "CALIFORNIA LION."

108. Lynx maculatus (Vigors & Horsfield).
SPOTTED LYNX.

109. Lynx rufus (Güldenstadt).
RED LYNX.

A PRELIMINARY LIST OF PACIFIC COAST HEPATICÆ.

LUCIEN MARCUS UNDERWOOD.

The Hepaticæ or liverworts represent a group of plant life in which a peculiar interest centers. Though they lack the economic importance possessed by the fungi, though they do not appeal in a popular way to our æsthetic nature like the marine algæ and the ferns, they nevertheless possess a three-fold interest to the general student of botany. In the first place they stand on the dividing line between thallose and cauline plants; from the standpoint of anatomy they afford illustration of the earliest and simplest differentiation of tissues since they present every gradation from a simple thallus to a well-developed leafy axis; many structural problems find illustration and settlement here. In the second place they illustrate in a marked degree variability of form resulting from habitat, climate and physical environment; to the systematist this group presents special fascination, the more so when we attempt the problem of generic limits, always puzzling but here pre-eminently so, notwithstanding the critical work recently done by Spruce and Lindberg. And lastly in the matter of distribution, both in time and space, the hepatics present many interesting and anomalus questions which increase in complexity as we attempt to unravel their genetic relations to other groups of plant life with which they show an evident connection.

The attention given to the Hepaticæ in America has been comparatively slight, and in no region is this more apparent than on some portions of the Pacific Coast.[1] Many of our botanical teachers seem to fail in their appreciation of the extent and importance of the group, and a number of the botanical text-books in common use which attempt to treat the subject in some way manage to con-

[1] It is a surprising fact that the Hepaticæ of many less settled portions of America are better known than those of California. The labors of Wright and others in the West Indies, of Liebmann and Müller in Mexico, of Lindig in Columbia, and lastly of Spruce in Brazil and the Andes, have not only added greatly to our knowledge of the group, but have furnished some of the most elaborate systematic works yet published. Gottsche's "De Mexicanske Levermosser," containing the results of Liebmann's Explorations is a most elaborate monograph, and its plates executed by Dr. Gottsche himself are matchless. On the other hand, Spruce's "Hepaticæ of the Amazon and the Andes," contains some of the most accurate and complete descriptions of liverworts in any literature, as well as the most mature and valuable conclusions on classification that have ever been made.

vey an erroneous impression of the group that is annoying.[2] Liverworts, lichens and true mosses are all too much neglected in a land where new species of spermaphytes are constantly coming to light. It is high time that some attention be devoted to their study. It was the intention of the authors of the "Botany of California" to include an account of the Hepaticæ in that publication in connection with the account of the mosses, and although the MSS. was prepared for the publishers it was found to be impracticable to print it because of the paucity of material and the numerous uncertainties and deficiencies it contained. An illustration of this, and as well of the great difficulty of securing observers to ascertain the simplest facts may be profitably recorded here. *Conocephalus conicus* is perhaps our largest and most conspicuous liverwort. The MSS. of the "Botany of California," included this species more because its known distribution elsewhere would make its occurrence in California probable and added the statement, "not certainly known from California" to its habitat. To determine its presence in the State, the present writer some years ago addressed letters to one after another of the botanists and botanical collectors of the State. In every case the evidence received was negative and no certainty was reached until during a trip to the Santa Cruz Mountains in July, 1888, we found it growing along Bowlder Creek forming its conspicuous and extensive mats in great abundance. It is probably widely distributed in the State wherever water and shade are abundant. This list has been prepared with the view to call attention to the present known distribution of Pacific Coast hepatics, and as well to point out for future collectors the vast areas of unexplored territory where diligent search cannot fail to result in a harvest of interesting species.

The Hepaticæ are shade-loving and moisture-loving plants and will be found in profusion in wooded cañons and along shaded watercourses, on rotting logs, in bogs, on clay banks and on the bark of trees. No part of the Pacific Coast region of the United States except possibly the environs of San Francisco can be said to have

---

[2] Average botanical collectors, even some whose training ought to have given better results, frequently mistake the thallose lichens for thallose liverworts, and the two ranked mosses for foliose liverworts. The fleshy texture ought to determine in the first instance, and the absence of a midrib in the leaf will easily distinguish a foliose liverwort from a true moss.

been worked over with any degree of thoroughness. The high Sierras, the Yosemite region, the Shasta region, the mountains of the Coast range, and the entire Southern half of California, with one or two solitary exceptions, have thus far yielded no species of this group of plants. Except for a few scattering species from Oregon and Washington little is known of the hepatic flora of these vast areas that ought to be exceedingly prolific. The Northern portion of Idaho has been more fully explored by Mr. Leiberg, who is constantly sending interesting material. The rich and varied flora of the higher plants of the Pacific States has had the effect to withdraw attention from the equally interesting but less conspicuous cryptogams. The Government surveys of British Columbia have, through the agency of Prof. Macoun, brought to light many new forms from this region.

The foundation for this list rests on many sources of information. The published lists of Bolander,[3] Stephani[4] and Pearson,[5] have been utilized, as well as the MSS. prepared for the Botany of California which Dr. Sereno Watson generously placed in my hands in 1883 with permission to use it as I saw fit. This was prepared by Dr. Watson, with some assistance from C. F. Austin shortly before the death of the latter.[6] As Mr. Austin possessed the largest collection of American Hepaticæ in existence at that time, his notes on the margins of the MSS. supply some deficiencies and verify numerous conjectures.

In addition to the literature mentioned above, specimens of hepatics from the Gray Herbarium at Cambridge, the Torrey Herbarium at Columbia College, and the Collections of the California Academy of Sciences, have furnished some data. In the Gray Herbarium are drawings by Dr. Gottsche of several Californian species sent by

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[3] H. N. BOLANDER. A catalogue of the Plants growing in the Vicinity of San Francisco. 4to. San Francisco: A. Roman & Co., 1870.

[4] F. STEPHANI. Hepaticæ von der Halbinsel Alaska, gesammelt, 1881–82; von den Doktoren Arthur und Aurel Krause. *Engler's botanische Jahrbücher*, viii, 96–99 (1887).

[5] WM. HY. PEARSON. List of Canadian Hepaticæ, Montreal, 1890. (*Geol. and Nat. Hist. Survey of Canada.*)

[6] Coe Finch Austin died 18 March, 1880. It will always be a source of regret that his collection left this country notwithstanding the fact that it has fallen into excellent hands.

Dr. Bolander.[7] My own collection, moreover, contains numerous Californian specimens communicated by Dr. H. N. Bolander (1883), Dr. W. G. Farlow (1886), S. B. Parrish (1886), Mrs. Brandegee (1886–90), Dr. C. Gottsche (1887), C. G. Pringle (1888), Miss M. E. Parsons (1888), Prof. E. L. Greene (1888), Prof. J. G. Lemmon (1888), Dr. H. E. Hasse (1889), Miss Ida Teed (1890), and others, besides a considerable personal collection made at various points in the State during the summer of 1888. From Washington specimens have been communicated by C. G. Pringle (1888), T. S. Brandegee (1889) and C. V. Piper (1890). From Idaho extensive collections have been received during the last two years from J. B. Leiberg. The collections of the Canadian Government made by Prof. John Macoun during 1889 and 1890, together with some made at an earlier date, have been given to Mr. Cook and myself for determination, and include a large number from British Columbia. Acknowledgments are here made to all these parties for their generous assistance. It is hoped that further collections will be sent in from all portions of the Pacific Coast region, and we shall be only too happy to render any assistance to those who will undertake the collection of these interesting plants.

DISTRIBUTION OF THE PACIFIC COAST HEPATICÆ.[8]

I. RICCIACEÆ.

RICCIA.

Californica Aust.—C.
ciliata Hoffm.—C.
crystallina L.—I.
fluitans L.—B.
Frostii Aust.—N.
glauca L.—C.
intumescens Bisch.—C.
lamellosa Raddi.—C.
natans L.—B.I.
nigrella DC.—C.
sorocarpa Bisch.—C.
Watsoni Aust.—N.

SPHÆROCARPUS.

terrestris var.
californicus Aust.—C.

II. MARCHANTIACEÆ.

MARCHANTIA.

polymorpha L.—A.B.C.I.W.

CONOCEPHALUS.

conicus Dum.—A.B.C.I.

FIMBRIARIA.

Bolanderi Aust.—C.
Californica Hampe.—B.C.
pilosa (Wahl.) Tayl.—B.W.

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[7] *Cf.* Botanical Gazette, xiii, 112–114 (May, 1888), where plates of four of these species appear.

[8] Abbreviations are as follows:—A, Alaska; B, British Columbia; C, California; I, Idaho; N, Nevada; O, Oregon; W, Washington.

FIMBRIATA.
tenella Nees.—B.
violacea Aust.—B.C.
ASTERELLA.
hemisphærica Beauv.—B.
GRIMALDIA.
barbifrons Bisch.—I.
Californica Gott.—C.
CRYPTOMITRIUM.
tenerum (Hook.) Aust.—C.
PREISSIA.
hemisphærica (L.) Cogn.—A.B.I.

III. ANTHOCEROTACEÆ.

ANTHOCEROS.
cæspiticius DeNot.—C.
fusiformis Aust.—B.C.O.
Hallii Aust.—C.O.
lævis L.—C.
Oreganus Aust.—O.
stomatifer Aust.—B O.
sulcatus Aust.—O.

IV. JUNGERMANIACEÆ.

ANEURA.
latifrons Lindb.—B.C.I.O.
multifida (L.) Dum.—B.
palmata (Hedw.) Nees.—B.
pinguis (L.) Dum.—B.C.
pinnatifida Nees.—C.
METZGERIA.
conjugata Lindb.—B.
pubescens (Schrank) Raddi.—A.B.I.
PALLAVICINIA.
Hibernica (Hook.) S.F. Gray.—B.
PELLIA.
endiviæfolia (Dicks.) Raddi—B.I.
epiphylla (L.) Nees.—B.
BLASIA.
pusilla L.—B.W.
FOSSOMBRONIA.
Dumortieri (H. et G.) Lindb.—B.
longiseta Aust.—B.C.
pusilla (L.) Raddi.—C.?
GYMNOMITRIUM.
concinnatum (Cigtett.) Corda.—A.B.
coralloides Nees.—A.
MARSUPELLA.
Bolanderi (Aust.) Und.—C.
AITONIA.
erythrosperma (Snel.) Und.—B.
SAUTERIA.
limbata Aust.—C.
CLEVEA.
hyalina (Somm.) Lindb.—B.
LUNULARIA.
vulgaris Mich.—C.
TARGIONIA.
hypophylla L.—C.
MARSUPELLA.
emarginata (Ehrh.) Dum.—B.
sparsifolia (Lindb.) Dum.—B.
sphacelata (Gieseke.) Dum.—A.B.
NARDIA.
crenuliformis (Aust.) Lindb.—B.
hyalina (Lyell) Lindb.—C.
scalaris (Schrad.) Lindb.—B.
JUNGERMANIA.
alpestris Schl.—B.
attenuata Lindenb.—B.
barbata Schreb.—B.I.
Bolanderi Gott.—C.
capitata Hook.—B.
colpodes Tayl.—B.
cordifolia Hook.—A.B.
Danicola Gott.—C.
excisa Dicks.—B.I.W.
exsecta Schmid.—B.
Flœrkii Web. & Mohr.—B.
Helleriana Nees.—B.
incisa Schrad.—B. I.
inflata Huds.—B.
Kunzeana Hübn.—B.
lycopodioides Wallr.—B.W.
Michauxii Web.—B.

JUNGERMANIA.

minuta Crantz.—A.B.I.
Mülleri, var. *Danaensis* Gott.—C.
porphyvoleuca Nees.—B. I.
quinquedentata Web.—B.
riparia Tayl.—B.
rubra Gott.—C.
saxicola Schrad.—A.
Schraderi Mart.—B. I.
setiformis Eherle.—A.B.
ventricosa Dicks.—A. B.

LIOCHLÆNA.

lanceolata (L.) Nees.—B.

MYLIA.

anomala (Hook.) S. F. Gray.—B.
Taylori (Hook.) S. F. Gray.—B.

HARPANTHUS.

Flotowianus Nees.—B.

CHILOSCYPHUS.

ascendens Hook. & Wils.—B.
polyanthos (L.) Corda.—B.C.I.W.

LOPHOCOLEA.

bidentata (L.) Dum.—B.I.O.W.
Hallii Aust.—O.
heterophylla (Schrad.) Dum.—B.
Leibergii Und.—I.
minor Nees.—B.

PLAGIOCHILA.

asplenoides (L.) Dum.—B.
interrupta (Nees.) Dum.—B.
porelloides Lindenb.—B.

DIPLOPHYLLUM.

albicans (L.) Dum.—B.
argenteum Spruce.—A.B.I.
Dicksoni (Hook.) Dum.—C.
obtusifolium (Hook.) Dum.—B.
taxifolium (Wahl.) Dum.—A.B.I.

SCAPANIA.

Bolanderi Aust.—A.B.C.O.W.
compacta (Roth.) Dum.—B.
curta (Mart.) Dum.—A.B.
irrigua (Nees.) Dum.—B.
nemorosa (L.) Dum.—A.B.I.
Oakesii Aust.—B.
uliginosa (L.) Dum.—B.

SCAPANIA.

umbrosa (Schrad.) Dum.—B.I.
undulata (L.) Dum.—B.C.W.

GEOCALYX.

graveolens (Schrad.) Nees.—B.W.

KANTIA.

trichomanis (L.) S. F. Gray.—B.C.I.

BLEPHAROSTOMA.

trichophyllum (L.) Dum.—B.I.

ANTHELIA.

julacea (L.) Dum.—B.C.?

PLEUROCLADA.

albescens (Hook.) Spruce.—B.

CEPHALOZIA.

bicuspidata (L.) Dum.—B.
catenulata (Hübn.) Lindb.—B.C.I.W.
dentata (Raddi) Lindb.—B.
divaricata (Sm.) Dum.—B. C.
extensa (Tayl.) Spruce.—B.
Lammersiana (Hübn.) Spruce.—B.
Macouni Aust.—B.
multiflora Spruce.—B.C.I.W.
pleniceps (Aust.) Und.—B.

BAZZANIA.

deflexa (Nees.) S. F. Gray.—B.
trilobata (L.) S. F. Gray.—B.

HERBERTA.

adunca (Dicks.) S. F. Gray.—A.

LEPIDOZIA.

reptans (L.) Dum.—B.C.I.

PTILIDIUM.

Californicum (Aust.) U. & C.—B.C.I.O.W.
ciliare (L.) Nees.—A.B.

PORELLA.

Bolanderi (Aust.) Und.—B.C.
lævigata (Nees.) Lindb.—B.
navicularis (L. & C.) Lindb.—A.B.C.I.O.W.
platyphylla (L.) Lindb.—B. C.? I.
platyphylloidea (Schu.) Lindb.—B.
rivularis (Nees.) Und.—B.C.I.

RADULA.

arctica Steph.—A.
complanata (L.) Nees.—B.C.
Hallii Aust.—O.
Krausei Steph.—A.I.
spicata Aust.—B.C.O.W,
tenax Lindb.—B.

LEJEUNEA.

Macounii Spruce.—B.
—— sp. indet.C.[9]—

FRULLANIA.

Asagrayana, var. *Californica* Aust.—B.CW.
Bolanderi Aust.—B. C.
Chilcootiensis Steph.—A.
Hallii Aust.—B.O.
Nisquallensis Sulliv.—B.O.
tamarisci (L.) Raddi.—B.

THE DISTRIBUTION MAY BE THUS SUMMARIZED:—

	Ricciaceæ.	Marchantiaceæ.	Anthocerotaceæ.	Jungermaniaceæ.	Total Species.
Alaska	—	3	—	19	22
British Columbia	2	10	2	98	112
California	8	10	4	31	53
Idaho	2	4	—	26	32
Nevada	2	—	—	—	2
Oregon	—	—	5	10	15
Washington	—	2	—	14	16
Total for Pacific Coast.	**13**	**17**	**7**	**118**	**155**

[9] Fragments of a *Lejeunea* were collected by me in California in the summer of 1888. It appears to be an undescribed species (*colo-Lejeunea*). It is the first occurrence of this genus in this part of the country.

A NEW CUCURBIT.

BY ALFRED COGNIAUX.

(With Plate XI.)

[The diagnosis of the following new genus and species of Cucurbitaceæ, by M. Alfred Cogniaux, has been sent with the accompanying figure (Plate xi) for publication in Zoe by Dr. George Vasey, Botanist of the Agricultural Department at Washington.]

VASEYANTHUS gen. nov.

Flores monoici. Masculi racemosi. Calycis tubus pateriformis, dentes 5, triangulari-subulati, brevissimi. Corolla rotata, usque ad basim 5-partita, segmentis triangularibus, acutis. Staminum filamenta in columnam centralem brevem coalita; antheræ in annulum arcte connatæ, loculis 5, linearibus, basi conduplicatis hippocrepiformibus, connectivo angustiusculo. Pollen magnum, læve, depresso-globosum, obscure 5–6-sulcatum. Pistillodium nullum.—Flores feminei in eadem axilla cum masculis solitarii. Calyx et corolla maris. Staminodia nulla. Ovarium suboblique ovoideo-oblongum, longe rostratum, biloculare; stylus brevissimus, stigmate crasso, lato, bilobato; ovula in loculis solitaria, adscendentia. Fructus anguste ovoideus, leviter obliquus, crasse longeque rostratus, siccus, indehiscens (?), lævis, 2-spermus, pericarpio tenuis. Semina, erecta, regulariter obovata, valde compressa, obscure marginata, basi leviter appendiculata, testa lævi.

Herba prostrata, gracilis, hispidula, viridi-cinerea. Folia petiolata, ambitu suborbicularia, usque ultra medium 5–7-lobata, utrinque pilis brevissimis rigidis subadpressis inferne incrassatis dense vestita. Cirrhi bifidi. Flores minuti, albescentes. Fructus parvus.

VASEYANTHUS ROSEI. Rami graciles, profunde sulcati, sparse hirtelli. Petiolus gracilis, striatus, brevissime denseque hirtellus, 2–3 cm. longus. Folia rigidiuscula basi profunde angusteque emarginata, 3–4 cm. longa lataque, lobis anguste obovatis, apice acutis vel subrotundatis, inferne satis constrictis, margine irregulariter undulato-dentatis. Cirrhi graciles, breves, sulcati, sparse hirtelli. Pedunculus communis masculus gracilis, striatus, sparse hirtellus, 2–4 cm. longus, superne 8–15 florus; pedicelli capillares, patuli, 2–4 mm. longi. Calyx glaber, 2–4 mm. latus. Corollæ segmenta 5-nervia, brevissime sparseque papillosa, 2 mm. longa, basi 1½ mm.

lata. Pedunculus femineus gracilis, 3–5 mm. longus. Ovarium 3 mm. longum; stylus ½ mm. longus, stigmate 1 mm. lato. Fructus (immaturus) 5–6 mm. longus, 4 mm. crassus, rostro satis arcuato, inferne incrassato, 4–5 mm. longo Semina pallida, 6 mm. longa, 4 mm. lata.

Ce genre, qui appartient à la tribu des *Cyclantherea*, se distingue facilement des *Cyclanthera* Schrad. et *Brandegea* Cogn., à côté desquels il doit être placé; l'unique espèce qu'il comprend jusqu'ici rappelle quelque peu, par ses feuilles assez découpés, certaines formes du genre *Maximowiczia*, auquel MM. Vasey et Rose l'ont récemment rapporté, avec doute, dans le No. III de leurs *Contributions from the U. S. National Museum*, p. 70. Je le dédie au savant botaniste Dr. Georges Vasey, chef de la Division de Botanique au Department de l'Agriculture, à Washington; et je donne à l'espèce le nom de M. J. N. Rose, son aide et distingué collaborateur.

In California inferiore inter rupibus ad La Paz (Edw. Palmer n. 102; comm. cl. a T. S. Brandegee.)

THE GEOGRAPHICAL DISTRIBUTION OF LAND BIRDS IN CALIFORNIA.

BY CHARLES A. KEELER.

Part V. Accidental Visitants.

The presence of accidental visitors within our territory might be considered with almost equal propriety either under the head of geographical distribution or of migration. Inasmuch as in accounting for the presence of such species migration plays a prime part, the subject will here be discussed only in a brief and incomplete manner.

The first point that strikes us in looking at a list of the land birds which have accidently straggled into California is the fact that all are American; in fact, with one exception, that all are North American. Most of them are Eastern species or varieties, while a few are Mexican. Probably the most complex problem presented is that of accounting for the presence within our limits of typical Eastern species, of which we have a distinct Western variety. There are three such species which have been recorded: the Eastern junco, fox sparrow and downy woodpecker. Mr. W. Otto Emerson took a typical specimen of *Junco hyemalis*, at Haywards, Alameda County,

on March 20, 1880; another was taken at Riverside, San Bernardino County, on February 10, 1888, and a third on December 1, 1888, by Mr. W. W. Price; while Mr. Jeffries, in the Auk, records as a fourth capture a specimen taken at Santa Barbara on April 1, 1889. Mr. F. H. Holmes has told me of still another specimen which he took, but I do not know the locality or date. Nearly all of these specimens have been identified by Mr. Ridgway as typical *Junco hyemalis*. Of the fox sparrow *(Passerella iliaca)*, only one typical specimen has been recorded from California, it having been taken by Mr. A. M. Ingersoll, at Poway, San Diego County, January 3, 1888,* but in the appendix to the History of North American Land Birds (iii, p. 516), "the capture of a specimen exactly intermediate between *P. iliaca* and *P. townsendii*, at Saticoy, California, December, 14, 1872, by Dr. J. G. Cooper," is recorded. Mr. L. Belding has recorded the capture of a typical specimen of the downy woodpecker *(Dryobates pubescens)* at Marysville on December 27, 1877,† the only one ever taken within our limits.

It will be noticed that all of the above records were made at times when the western variety of the species was common in the same locality, and none were taken during the breeding season. At first sight it might seem possible to explain the presence of these birds by reversion. Our western varieties, being only nascent species, might be supposed to have occasionally reverted to an earlier type; but the great objection to this theory is that these western captures being typical eastern forms of to-day, we would be compelled to assume that the eastern species had remained at a standstill during the time which had elapsed since the western forms had commenced to evolve. This, although possible in exceptional cases, seems highly improbable. To the theory that certain individuals had escaped the influences which had operated in producing the variety the same objection would hold good. Still, California has doubtless seen more changes of climate and physical features during recent geological time than the Eastern States, which might have produced a more rapid change in western forms than in eastern.

The above theories might serve to account for *Dryobates pubescens*, but with *Junco hyemalis* and *Passerella iliaca* an easier expla-

* Proc. Cal. Acad. Sci., ii, 2d Ser., p. 90.

† Proc. U. S. Nat. Mus., 1878, p. 428.

nation can, I think, be found. Both birds breed in Alaska, and it is highly probable that individuals occasionally wander from their southeastern course, thus reaching California. The frequency of the occurrence of *Junco hyemalis* would seem to indicate this, as well as the occurrence of a sparrow exactly intermediate between *Passerella iliaca* and *P. iliaca townsendii*. The habitats of the two birds in Alaska are adjoining, and this intermediate specimen may be either a hybrid or, more probably, a form from the locality where the two varieties intergrade.

There are two other eastern species which have no western representatives, but whose occurrence within our limits may easily be accounted for in the same way as the preceding, viz: by straying from their regular southeastern route of migration and coming south with our regular fall migrants. These two are the cat bird (*Galeoscoptes carolinensis*), and the redstart (*Setophaga ruticilla*), both of which Mr. Clark P. Streator has found breeding commonly in British Columbia.* There are, however, a number of eastern species which cannot be so easily accounted for. Such are the white-throated sparrow (*Zonotrichia albicollis*), the black and white warbler (*Mniotilta varia*) and the cærulean warbler (*Dendroica cærulescens*). None of these species ever normally reach any part of the Pacific Coast, so far as we now know, and yet two instances are on record of the capture of the first mentioned species in the vicinity of San Francisco Bay.† Mr. W. Otto Emerson took one at Haywards on November 20, 1889, and Mr. T. E. Slevin collected one near San Francisco on December 23, 1888. The two warblers were taken by Mr. Emerson on the Farallon Islands,‡ and their records so far remain unique. These islands appear to lie in the direct path of migrating birds and to afford a convenient resting-place for the weary wanderers.

We do not find the same difficulty in accounting for the two specimens of Grinnell's water thrush (*Seiurus noveboracensis notabilis*), which Mr. A. M. Ingersoll has collected—one at Santa Cruz on September 21, 1885, and the other at San Diego on September 11, 1887. The only wonder is that the bird is not more common within our limits, as it is found both north and south of California.

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* Bull. Am. Mus. Nat. Hist., Vol. iii, No. 1, pp. 151-152.

† Zoe, i, 2, pp. 45-46. ‡ Proc. Cal. Acad. Sci , 2d Ser., i, p. 48.

All of the species thus far considered have apparently reached us by getting out of their regular north and south routes of migration, but there are some species which have been taken in the State which are normally restricted to a far more southern habitat. The most remarkable occurrence of this sort is that of *Piranga rubriceps*, which Mr. Walter E. Bryant has recorded from Dos Pueblos, Santa Barbara County.* As this is a strictly South American species, it is certainly very remarkable that it should have wandered so far from its native home. Mr. Wm. Price has recorded another South American species from Riverside,† which, however, normally reaches a much higher latitude that the preceding — *Vireo flavoviridis*. One specimen of the cape robin *(Merula confinis)* was taken at Haywards on January 27, 1883, a considerable distance from its natural habitat in Lower California.

The remarks made with reference to *Dryobates pubescens* would perhaps apply equally to the specimen of *Spinus psaltria arizonæ*, taken by Mr. Emerson at Haywards, January 10, 1883, and pronounced by Mr. Ridgway as typical of the Arizona variety, while the same is the case with a specimen of the savanna sparrow *(Ammodramus sandwichensis savanna)*, which Mr. Emerson collected in the Volcan Mountains, San Diego County, March 9, 1884, and also identified by Mr. Ridgway. The following is, I believe, a complete list of the accidental visitants to California so far as recorded.

Buteo abbreviatus.—One shot thirty miles north of San Diego. (Cooper, Geol. Surv. of Cal. Ornith., I, p. 480.)

Megascops asio kennicottii.—Spring of 1883, at Baird. (Townsend, Proc. U. S. Nat. Mus., 1887, p. 203.)

Megascops flammeolus.—"A specimen of this southern owl was taken at Fort Crook in August, 1860, by Captain John Feilner—the first instance of its capture in the United States." (Townsend, Proc. U. S. Nat. Mus., 1887, p. 204.

Trochilus rubromitratus.—San Francisco. (Bryant, Forest and Stream.)

Dryobates pubescens.

Colaptes auratus.—A few typical specimens have been taken in California, but the whole question of the flickers is so perplexing and so little understood that nothing need here be said on it. It is

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* Auk, Jan., 1887, p. 78. † Auk, V, p. 210.

certainly very fortunate that Mr. Allen is to make a systematic study of the problem.

Spinus psaltria arizonæ.

Ammodramus sandwichensis savanna.

Zonotrichia albicollis.

Spizella monticola ochracea. (?) — Haywards. Dr. Cooper. No specimens collected.

Junco hyemalis.

Melospiza fasciata rufina.—Haywards, November 23, 1882. (Emerson, Zoe i, 2, p. 45.)

Passerella iliaca.

Piranga rubriceps.

Vireo flavoviridis.

Mniotilta varia.

Dendroica cærulescens.

Seiurus noveboracensis notabilis.

Setophaga ruticilla.

Galeoscoptes carolinensis.

Merula confinis.

CALIFORNIAN LOBELIACEÆ.

BY KATHARINE BRANDEGEE.

Only one species belonging to the genus Lobelia, as at present recognized, has so far been detected within our borders, though one closely related genus abounds, and species belonging to two others are occasionally collected.

Palmerella described from northern Lower California is separated from Lobelia only by its adnate stamens and entire corolla-tube. It is accepted as a genus by Bentham & Hooker, Gen. Pl. ii, 1238, but compared with Isotoma, of which there is one West Indian species. Baillon in Histoire des Plantes, viii, 322, unites it and nearly all the neighboring genera to Lobelia. In this he is followed by Prof. E. L. Greene of Berkeley, who, finding the names of the species of Palmerella preoccupied* in Lobelia, promptly furnishes new ones,

* Pitt, i, 291. The specific name, *Palmerella debilis* Gray, is apparently changed because of *Monopsis debilis;* the genus Monopsis having been reduced by Baillon and Benth. & Hook. to a section of Lobelia. It is, however, re-affirmed by eminent authority—Urban in Jahrb. Bot. Mus. i, 260, and Schönland in Pflanzenfamilien. *P. tenera* suffers a similar change on account of *Lobelia tenera* HBK., a species noted by De Candolle as "*L. paucifloræ* simillima."
Under the circumstances we might well have been spared the synonyms.

including one for the broad-leaved variety of *P. debilis*, which he claims to be specifically distinct. Schönland in Pflanzenfamilien Lief., 36, p. 68, reduces Palmerella to Laurentia. The three genera—Isotoma, Laurentia and Palmerella—differ only in the degree in which the stamineal tube is adnate to the corolla and in the irregularity of the corolla limb; and as Palmerella has been reduced either by implication or directly to each of the others, the most convenient method of disposing of them would seem to be to unite the species under the older generic name.

The fruit of Palmerella appears to be undescribed. It is nearly inferior, clavate, 6–8 mm. long, thin-walled, completely 2-celled, dehiscing by two valves at the apex. The seeds are small, smooth, light brown, with minute embryo, truncate or notched at the end opposite the radicle.

Downingia, the showy lobeliaceous plant so common in low grounds of our interior valleys and foothills, is separated from all its near relatives by its dehiscence. The sessile capsule is entirely inferior, not even the summit emerging, and therefore unable to open by apical valves, its seeds escape through longitudinal fissures. The genus *Grammatotheca*, as represented by *G. Bergiana*, bears a very strong resemblance to Downingia, and was indeed formerly included in it under Clintonia. The capsule is sessile, linear, triquetrous, and opens by longitudinal fissures as in Downingia, but has also the bivalvular dehiscence, and cleft corolla-tube of Lobelia. It has been reduced to Lobelia by Bentham and Hooker, and also by Baillon, but is again separated by Schönland in Planzenfamilien. In spite of the differences noted, Downingia is apparently more closely related to Grammatotheca than to any other of the lobeliaceous types.

Downingia has lately suffered from a notable inflation of its species. For a long time the genus was supposed to consist of only three—the Chilian *D. pusilla*, our *D. elegans*, to which *Clintonia corymbosa* DC. has usually been referred, and *D. pulchella*. To these species Dr. Gray added a fourth, under the name of *D. bicornuta*, chiefly distinguished by elevated conical processes in the throat, and Professor Greene has since become responsible for five more—*D. concolor*, *D. insignis*, *D. montana*, *D. ornatissima*, and *D. tricolor*—wholly untenable species, founded upon the most trivial distinctions of form and markings of the extremely variable corolla.

The appended notes of material accessible to me are furnished as a contribution to the better knowledge of these plants, and in the hope that directing attention to their unstable characters, sufficient data may be collected to determine whether even *D. elegans* and *D. pulchella* can be held sufficiently distinct.

All the specimens here mentioned, excepting the first, are in the herbarium of the California Academy of Sciences, and even these few examples invalidate all the recently proposed species, including Dr. Gray's *D. bicornuta* The color character cannot well be investigated in herbarium specimens, but it is known to be infinitely variable in cultivation.

Baillon is probably right in discrediting the generic value of the tufts or setæ of the anthers in Lobeliaceæ; they certainly differ very much in Downingia. The saccate protuberances of the lower lip,* so conspicuous in *D. bicornuta*, are found greatly reduced in other forms, and the position assumed by the narrow, more or less deeply divided posterior lobes of the corolla is obviously unworthy of attention as a factor in classification.

The most robust form of Downingia known to me is No. 289 of the collection of T. S. Brandegee, from The Dalles, Oregon, about a mile below the town, in depressions, which are filled with water in the winter. They are a foot or more in height, with stout, branching stems, and probably represent the apparently little known *D. corymbosa*. The capsule is stout, ordinarily less than an inch in length, with broad bracts about one-third as long, and is hispid on the angles, though less so than in many of the Californian forms. According to Bentham & Hooker, the cotyledons in Downingia are conferruminate. In this form, as well as all the others of which we have mature fruit, they are either united to the tip and rounded at both ends or cleft for a variable but always short distance—both forms in varying proportions in the same capsule. In fact, the embryo scarcely differs from that of small lobeliaceous plants in general.

In the typical specimen of *D. concolor* the tube is cleft no deeper at the back than at the sides, upper lobes not deflexed nor appressed to the sides of the tube; lower lip saccate, the slender posterior segments of corolla variously disposed—rolled up, bent forward or backward, or even crossed.

*In all these notes the apparent position of the flower is meant.

A specimen collected by Mr. C. E. Unangst, Plainsberg, Cal., has the lower lip 2-saccate, with two lateral folds at the constriction in the throat. The upper acute lobes are broad at the base, with a broad, somewhat saccate sinus between them, and are auricled at the sides above the base. The setæ of the anthers are very short,, scarcely longer than the penicillate hairs surrounding them. The three upper anthers are also minutely penicillate. The plant is scabrous all over, and is perhaps *D ornatissima* Greene, but posterior segments of the corolla not rolled up either in this or in a similar specimen collected by Professor Greene, "near Vallejo, May, 1874."

Specimens collected by Dr. Gustav Eisen, Fresno, April, 1879, are similar to the last, but the upper lobes shorter and more acute. Specimens from Lake County, more leafy than the southern ones, have short and small flowers, the lower lip plane and the posterior cleft not so deep as the lateral ones.

A specimen from Hyampum, Trinity River, 1883, collected by Volney Rattan, has very large flowers, the tube broad, the lateral clefts so deep that the tube is only about one-fifth the length of the flower, the posterior cleft not so deep, lower lip plane.

A specimen collected by Mr. Elisha Brooks at Forbestown has the posterior segments acute, with triangular sinus and two very small conical prominences on the ample lower lip.

Specimen of *D. elegans*, Barren Valley, Baker County, Oregon, June, 1885, has short and broad, nearly equally cleft tube, lower lip large, with two yellow longitudinally saccate folds in the throat and long stamen tube.

Specimens from Antioch have a similar broad tube, cleft a little more deeply at the sides than on the back, the saccate folds of the throat a little more elevated and not so long. They are perhaps *D. insignis*, which is described, however, as having "the upper lip merely bifid, cleft only two-thirds down," and thereby separated from *D. elegans*, which is credited with "upper lip cut completely to the base"! These specimens from Antioch have the anthers densely hispid, and the longest capsules (three inches) observed.

D. bicornuta is in the herbarium from "Mokelumne River, 1885." The conical processes in the throat are very prominent, and the two setæ are twisted together so as to appear but one, and are nearly as long as the anther.

Specimens marked "No. 101, *Downingia bicornuta* Gray, road to Sierra Valley, Nevada County, July, 1884," agree well enough with the description of the form to which the name *D. montana* has been given. The throat is plane, as it is in specimens from the shore of Lake Tahoe, collected by the writer in September, 1884, but in others collected by Dr. Kellogg — "Summit Camp, Sierra Nevada, July 14, 1870" — the flowers of which are otherwise much the same, the lower lip is furnished with two prominent yellow processes.

Parrishella appears by habit and capsular structure more nearly related to the Andean genus Lysipoma than to the Cyphiæ, with which it is usually classified. The operculate capsule soon becomes 1-celled above the middle.

Nemacladus has suffered inflation in the same manner as Downingia. To the earlier species, *N. ramosissimus* and *N. longiflorus*, the writer added the very robust *N. rigidus* from near Steamboat Springs, Nevada, and Prof. Greene more than doubled the species by his *N. capillaris*, *montanus*, *pinnatifidus*, *rubescens* and *tenuissimus*, all from a similar climatic region. Dr. Gray in Supp. to Vol. ii, pt. 1, of his Synoptical Flora, reduced all these forms to *N. ramosissimus*, with the exception of *N. rigidus*, which also will probably prove to be only an outlying form.

"THE WOLVERENE *(Gulo luscus)* IN CALIFORNIA."

BY WALTER E. BRYANT.

In the December number of Zoe, Mr. L. Belding recorded the occurrence of the wolverene in California having several times seen animals and tracks in the high Sierra, and also upon the authority of a trapper in Alpine County who caught one and had it stuffed. Mr. Belding has presented me with a good photographic likeness of the mounted specimen, taken from the photograph in the possession of Mrs. J. B. Scott.

Mr. H. W. Dickinson, who has lived in California since pioneer days, tells me that in 1855 he found a dead wolverene in a small creek near San Rafael, and in 1857 he saw one brought into the town of Healdsburg, it having been shot on Mill Creek.

This meagre data and the photograph is sufficient to establish the place of the wolverene in the fauna of the State.

A NEW SPECIES OF ESENBECKIA.

T. S. BRANDEGEE.

(With Plate XII.)

ESENBECKIA FLAVA. Shrub or small tree, sometimes 7 m. high with trunk 15–20 cm. thick; the young branches, panicles and the lower surface of the leaves rather densely pubescent with short spreading hairs: leaves alternate, broadly elliptic, 7–10 cm. long, glandular-punctate usually retuse or emarginate, sparsely pubescent above; petioles 10–16 mm. long: flowers in terminal panicles longer than the leaves, with pedicels a little longer than the flowers, jointed and bracteate at base and bi-bracteolate below the center, 5– sometimes 4–merous; calyx and corolla imbricate, the outer surface of both pubescent and glandular-punctate; sepals ovate 2 mm. long; petals oblong-oval three times as long as the sepals, rotate spreading: stamens as many as the lobes of the corolla, opposite the sepals and inserted beneath the 5–4 lobed disk, at the sinuses; filaments triangular-subulate, longer than the calyx-lobes, at length reflexed; anthers rounded, versatile, apiculate: ovary densely verrucose-echinate, surrounded by a broad, pulvinate disk; style stout, cylindrical or slightly clavate, the capitate stigma obscurely lobed: fruit depressed-globose, 3–4 cm. broad, 2 cm. thick, strongly verrucose-echinate; loculicidal and incompletely septicidal; endocarp cartilaginous, partly separating, the inner portion breaking and remaining attached to the hilum; seed large, broader than high, dark brown, glandular on the surface with a linear-elliptic aril extending from the hilum to the top of the seed ending at the prominence marking the place of the minute germ; cotyledons very thick, punctate glandular all over, radicle superior in the short axis of the seed.

San José del Cabo, common and extending north on the western coast some distance above Todos Santos, on the east as far as La Paz. It is called by the inhabitants "Palo amarillo"—yellow tree, from the color of the wood, and is often used for poles in the construction of their houses. The flowers, of a sickish-sweet odor, appear in August, and the fruit falls in December. Dr. Sereno Watson says that it was collected also by Xantus.

SECONDARY MIGRATION OF BIRDS.

BY A. W. ANTHONY.

In presenting the following notes on an unusual habit noted in several species of migratory birds, the writer does not try to explain the motive that prompts such species as Say's flycatcher to pause in its migration and raise a brood of young before preceeding to its summer home, nor does he claim that all individuals of a species are given to such eccentricities. The notes are presented as taken from the memoranda of field work and are published in hopes of inducing others, who may have observed similar habits, to publish their observations and by so doing throw more light on this interesting subject.

The question of whether a second migration occurred after the first broods were raised, and to what extent such migration extended if it took place, was first presented to my mind upon reading a note on the white-crowned sparrow by Mr. Frank M. Drew (Bull. N. O. C., iv., 139), in which he gives the species as nesting at Silverton, Colorado, and says: "After getting the first broods off their bills the white-crowns become scarce in the park but mumerous among the stunted bushes, above timber line, where they raise a second brood; thus making a double migration in the breeding season and keeping their love song in fashion until late in the fall."

These notes were verified by my own observations at Silverton in 1883, when white-crowns were found in abundance along the willow-lined streams in May and June and several nests were taken. After the first week in July, however, they were rather scarce in the lower valleys but suddenly made their appearance about the snow banks, above timber line, where a second brood was raised and where they remained in abundance until late in fall.

In this instance a migration certainly took place in the midst of the nesting season. To what extent in latitude it is impossible to ascertain, but vertically it could not have been less than 2,000 feet, and it is not unreasonable to suppose that in gaining this elevation some distance was also gained in latitude.

During the seasons of 1884–'85, and again during the past spring (1890), I devoted a large part of my time to collecting in the heavy fir forests of northwestern Oregon. Throughout this region the western winter wren was found to be rather common and apparently

resident as it was found nesting in April and May, but after May 15, very much to my surprise, they disappeared completely and were not again seen until after the first frosts of October. During the past season females were taken in Washington County from April 1 to 16, which either contained undeposited eggs in the oviduct or showed by the bare and wrinkled condition of the breast that incubation had begun, proving conclusively that the species bred in this locality. My last specimen was taken on April 25, after which date they began to disappear as in former years and were all gone by May 15; although the deepest, darkest recesses of the forest were searched repeatedly for evidence of the species not one could be found; thickets that in March and April rang with their clear, tinkling melody were entirely deserted; they had completely left the region of their first nesting and at a time which left an abundance of time for a second brood to be hatched in their new quarters.

In Grant County, New Mexico, another instance of secondary migration was noted. It was my misfortune to be obliged to spend the spring and summer of 1886 in the extreme southwestern corner of that Territory, in the midst of a very dry and barren range of hills, at a camp locally known as Apache. At this point I found Say's flycatcher quite common after March 12, and after the bulk of the spring migrants had passed on to the north several nests were found, the last being discovered May 26, but by June 1 the species had begun to grow less common again, and after the 16th of that month none were seen until the first fall migrant made its appearance on August 30. The sudden and complete disappearance of the species from the entire region was undoubted and could not be assigned to any local cause.

In this same connection might be mentioned the nesting at Camp Apache of turtle-doves during the fall migration. After the last of the spring migrants had disappeared no doves were seen about Apache nor in the adjoining ranges until August 20, after which they were very abundant; between August 25 and September 5 several dozen were shot for food and about eight out of every ten females contained eggs that would undoubtedly have been laid within the next day or two. On September 6 a nest was found with two eggs, which the parent was incubating. These were never hatched as they were destroyed by some prowling animal about ten

days after I discovered them. As no other nests were found I am inclined to think that a large percentage of the eggs must have been dropped at random and destroyed by small mammals or birds.

On March 9, 1888, while collecting in the open plain about San Quintin, Lower California, I was rather surprised at the capture of a young *Harporhynchus cinereus* in nearly adult plumage. No thrashers had been seen about San Quintin during the winter, and for a month previous to the capture of the specimen mentioned the ground had been explored almost daily without bringing to light any evidence of the species. A week later, however, St. Lucas thrashers were found in comparative abundance and apparently migrating still further northward. Several young were taken that were fully fledged and scarcely to be distinguished from the adults that still accompanied them. The majority of adults were unaccompanied by young, and several which were shot showed upon dissection that nesting would take place by the 30th of March at latest. Some of the more ambitious, however, had doubtless reared broods of young before leaving their winter quarters. (See under this species note in Birds of Lower California.)

RECENT LITERATURE.

I Hing, or Patriotic Rising: Chinese Secret Societies in the United States and *Customs of the Chinese in America.* By STEWART CULIN. Reprint from Journal of Folk-lore and the Antiquarian Society of Philadelphia. These papers deal with subjects of much interest to us on the Pacific Coast, where the Chinese form no inconsiderable part of our population. *I Hing* is said to be a branch of the great National Society of China known as the Water-lily Sect, or the Triad Society, which is opposed to the Manchu dynasty. The author says: "It was instituted in San Francisco between 1850 and 1860, during the time of the Tai-ping rebellion, when many of the emigrants were refugees from the outbreak which then occurred in the southern provinces. At present there are branches of the original society in most of the American cities in which there are Chinese colonies. These are known by different names, but are united in policy and object, and are in constant communication with each other."

"The order in San Francisco and throughout the State of Califor-

nia is called the *Chi Kung T'ong*. It has a hall on Sacramento street in San Francisco. In addition to the principal assembly there are said to be several subsidiary ones known by different names, such as the *Hip I T'ong* in San Francisco. To these lesser companies which are said to have for an object the protection of gambling-houses and the care and surveillance of those unfortunate women who constitute the greater part of the female emigrants from China, many offenses against the law are attributed. They are popularly regarded as bands of outlaws, ready and willing to commit any crime which the policy of their leaders may dictate. In Chicago and St. Louis the society is called the *Hung Shun T'ong*. Here, too, numerous crimes are attributed to the emissaries of the dreaded *I Hing*. The opportunity offered by the Chinese colony in this city for the intelligent study of their customs, beliefs and policy has been inexcusably neglected. There are among our Chinese residents many who speak excellent English, and many of our citizens have for various reasons acquired a fair knowledge of the Chinese language, and investigations of great interest may therefore be readily carried on." As Mr. Culin says, one of their pharmacies alone would make a fair beginning for a folk-lore museum.

The *Auk* for January has a colored frontispiece, by Mr. John L. Ridgway, of adult and young male of *Icterus northropi* Allen, a new species from Andros Island, Bahamas, named in honor of Dr. John I. Northrop. The eighth congress of the American Ornithologists' Union was held in Washington November 18–20, 1890, and attended by 20 active and only 18 associate members from more than 300 of the latter class. Twenty-four scientific papers were presented. The next meeting will be held at the American Museum of Natural History in New York City, November 17, 1891. The council presented the third supplement to the Union's check-list of North American Birds, and will issue annually a supplement of additions, changes, etc., in order to bring the nomenclature to date. The following species and subspecies added during the year have been accepted by the Union:

Totanus solitarius cinnamomeus Brewster.
Otocoris alpestris adusta Dwight.
Otocoris alpestris merrilli Dwight.
Otocoris alpestris pallida Townsend.
Coccothraustes vespertinus montanus (Ridgw.) Mearns.

Junco hyemalis shufeldti Coale.
Junco ridgwayi Mearns.
Amphispiza belli cinerea Townsend.
Melospiza fasciata graminea Townsend.
Melospiza fasciata clementæ Townsend.
Petrochelidon fulva (Vieill.) Cab. Florida. Accidental.
Callichelidon cyaneoviridis Bryant. Florida. Accidental.
Helminthophila celata sordida Townsend.
Sitta carolinensis atkinsi Scott.

One species, *Trochilus holoisa*, has been eliminated.

The following changes in nomenclature were made: *Buteo harlani* (Aud.)=*Buteo borealis harlani* (Aud.) *Falco sparverioides* Vig.=*Falco dominicensis* Gm. *Xema (Creagrus) furcata* (Neb.) =*Creagrus furcatus* (Neb.)

Two subspecies described during the year were rejected, viz: *Melanerpes formicivorus aculeatus* Mearns, and *Otocoris alpestris insularis* Townsend. Action has been deferred upon the following: *Porzana jamaicensis coturniculus* Baird vs. *Porzana coturniculus; Meleagris gallopavo osceola* Scott; *Ictinia plumbea* (Gm.); *Spinus tristis pallidus* Mearns; *Vireo vicinior californicus* Stephens. Three birds which have hitherto been supposed to be of accidental occurrence are now known to occur regularly; these are: *Buteo brachyurus* Vieill.; *Vireo altiloquuos barbatulus* (Cab.); *Parus meridionalis* Scl. The fact that describers have not, in all cases, submitted their new forms to the Union has prevented the committee from taking action upon them.

In General Notes, Mr. Ridgway proposes the name *Trochilus (Selasphorus) rubromitratus* for the bird now known as *Trochilus floresii (Selasphorus floresii)*, and explains the reasons for such change.

W. E. B.

The American Ornithologists' Union. A Seven Years' Retrospect. By J. A. ALLEN. This "address, delivered by the retiring president of the eighth congress of the Union" is well worthy of a careful reading, not alone by ornithologists but by all interested in the progress of biological science. Besides giving an interesting resume of the surprising amount of work which the Union has accomplished, Mr. Allen discusses in a most fair and satisfactory manner the question of the use of trinomials and the values of our terms species and variety. Many of our naturalists might well bear in

mind his words: "There are, of course, in reality no such things as species and subspecies, genera and subgenera, etc., although we commonly speak of them as entities. They are simply conventional devices by which we seek to record the facts in the evolution of life, and to catalogue its various forms and phases. By these terms we attempt to indicate the varying degrees of relationship between organized beings." C. A. K.

PROCEEDINGS OF SOCIETIES.

CALIFORNIA ACADEMY OF SCIENCES. *February 2, 1891.* President Harkness in the chair.

Dr. C. M. Richter, of the committee to draft resolutions on the death of Dr. Ferrer, presented the following report:

"It is with deep sorrow that we are called upon to chronicle the death of one of our most distinguished members, Dr. Henry Ferrer. He was one of the foremost standard-bearers of science on the Pacific Coast. He had not only attained a position of great eminence in his profession, a world-wide reputation in his specialty—he was not only the most skillful master in microscopy, inferior to none in its technique and application—but he was a warm promoter of science generally, one whose devotion to science will ever be gratefully remembered by the members of this Academy.

Your committee therefore recommend the following resolution:

Resolved, That the foregoing memorial of the late Dr. Henry Ferrer, member of the California Academy of Sciences, be placed in full on the minutes as a token of the estimation in which he was held by this Academy, and a copy thereof be forwarded to his widow and family."

A committee consisting of Messrs. Keeler, Bryant and Scupham, was appointed to memorialize the Legislature to take some steps to prevent the spread of the English sparrow.

CALIFORNIA ORNITHOLOGICAL CLUB—A re-organization meeting of the Club was held in the ornithological room of the California Academy of Sciences on February 10, attended by Messrs. Bryant, Taylor, Johnson, Holmes, Keeler and Macdonald. Mr. H. R. Taylor was elected president for the ensuing year, Mr. F. O. Johnson, vice-president, and C. A. Keeler, secretary and treasurer. Messrs. E. Carleton, Thurber, Bancroft and T. E. Slevin, were proposed as active members. A committee of two was appointed to draw up a proposed amendment to the constitution, to be reported on at the next meeting. A motion was carried making Zoe the official medium of the proceedings of the Club. It was decided that systematic notes be made during the coming season on the songs and nesting habits of Californian birds. Notes on nesting habits, which are very important, may include the number of days required in building the nest and the part taken by the male in the work; the position and composition of nest; length of incubation with part taken by the male in the work, and many other items which will naturally suggest themselves. The members were urged to continue the work of collecting gizzards for the committee on food habits. Mr. Taylor noted the puncturing of the corolla of a bellflower by Anna's hummer, where the tube was too long to enable the bird to insert its bill. Mr. Macdonald, agent for the sale of ornithological publications, reported on his work.

VASEYANTHUS ROSEI.

C.C. Farm del.

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